ORDER NO. GAD8610065C8

Service Manual

Radio

RF-1630J

(Black)

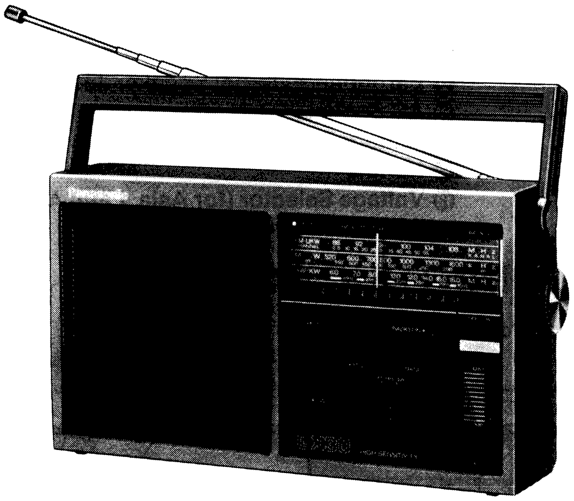
FM-MW-SW 3 Band Portable Receiver

This is the Service Manual for the following areas.

$\boxed{Z}$...For all European areas except United Kingdom, F.R. Germany, France, Italy and Finland

$\boxed{X}$...For Asia, Latin America, Middle East and Africa areas

$\boxed{L}$...For Australia



■ SPECIFICATIONS

General:

Power Requirement: AC; $\boxed{Z}$...220 V, 50 Hz
$\boxed{X}$...110~127/220~240 V, 50/60 Hz
$\boxed{L}$...240 V, 50 Hz
Battery; $\boxed{Z}$...6 V (Four "C" Size Flashlight Batteries)
(Panasonic UM-2 or equivalent)
$\boxed{X}$ $\boxed{L}$...6 V (Four "C" Size Flashlight Batteries)
(National UM-2 or equivalent)

Power Consumption: 4 W (AC only)

Power Output: $\boxed{Z}$...1 W...RMS (max.)
$\boxed{X}$ $\boxed{L}$...1.2 W...MPO
1 W...RMS (max.)

Speaker: 8 cm PM Dynamic Speaker (3Ω)

Output: Earphone/External Speaker; 3~8Ω/∅3.5

Dimensions: 246 mm (W)×131 mm (H)×79 mm (D)

Weight: 900 g without batteries

Radio Section:

Radio Frequency Range: $\boxed{Z}$...FM; 87.5~108 MHz
MW; 520~1610 kHz (577~186 m)
SW; 5.9~18 MHz (50.8~16.7 m)
$\boxed{X}$ $\boxed{L}$...FM; 88~108 MHz
MW; 530~1605 kHz (566~187 m)
SW; 5.9~18 MHz (50.8~16.7 m)

Intermediate Frequency: FM; 10.7 MHz
AM (MW/SW); 455 kHz

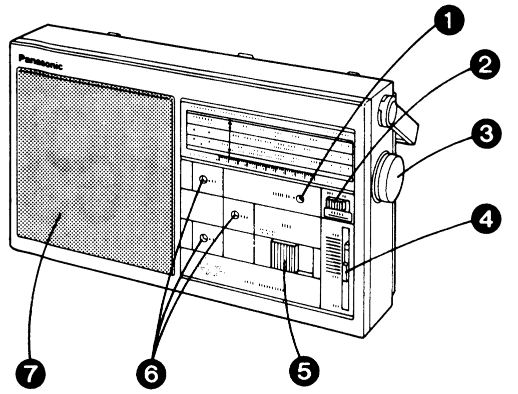
Sensitivity: FM; 3.2 µV/50 mW output
(−3 dB Limit Sens)
MW; 80 µV/m/50 mW output
SW; 13 µV/50 mW output

Design and specifications are subject to change without notice.

National / Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS



❶
❷
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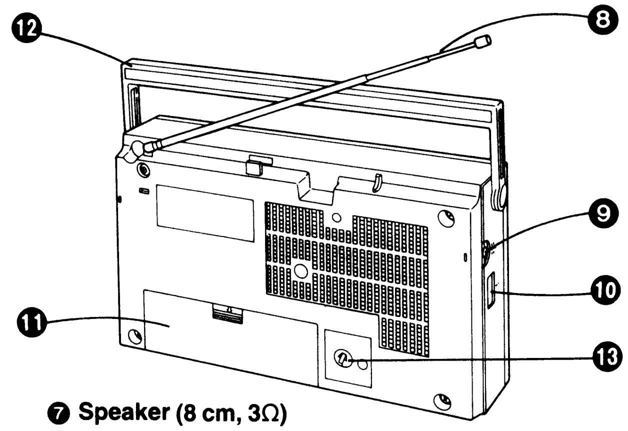
Panasonic



- ❶ **Radio On Indicator (RADIO ON)**
- ❷ **Radio Switch (RADIO)**
- ❸ **Tuning Control (TUNING)**
- ❹ **Volume Control (VOL)**
- ❺ **Band Selector (BAND)**
- ❻ **Band Indicators**

- ❼ **Speaker (8 cm, 3Ω)**
- ❽ **Telescopic Antenna**
- ❾ **Earphone/External Speaker Jack (IMP 3–8Ω ☊ ◁) ∅3.5**
- ❿ **AC Socket (AC IN ~)**
- ⓫ **Battery Compartment**
- ⓬ **Handle**
- ⓭ **Voltage Selector (for Asia, Latin America, Middle East and Africa areas.)**

DISASSEMBLY INSTRUCTIONS

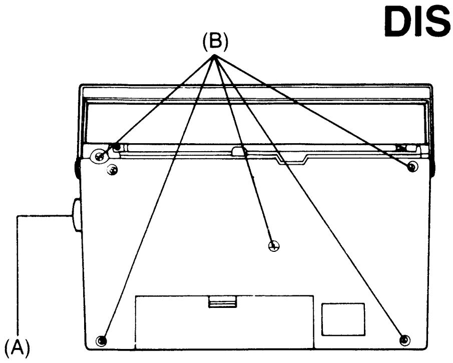


Fig. 1

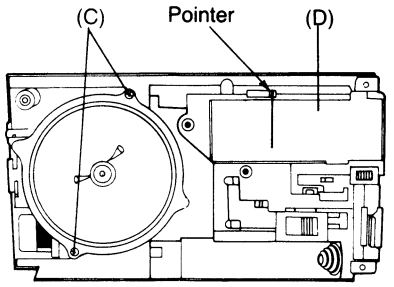
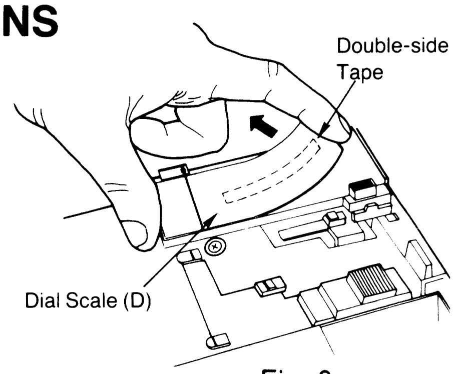


Fig. 2



Double-side Tape
Dial Scale (D)

Fig. 3

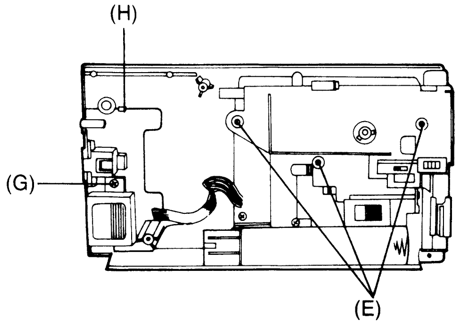


Fig. 4

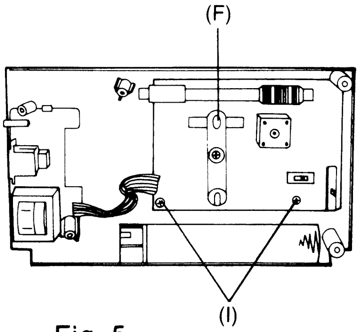
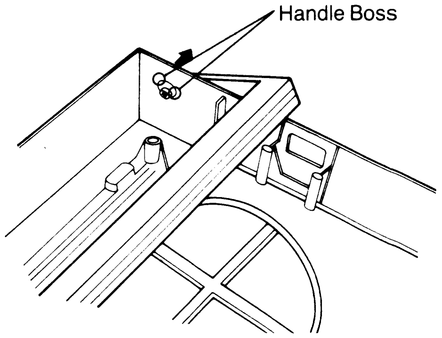


Fig. 5



Handle Boss

Fig. 6

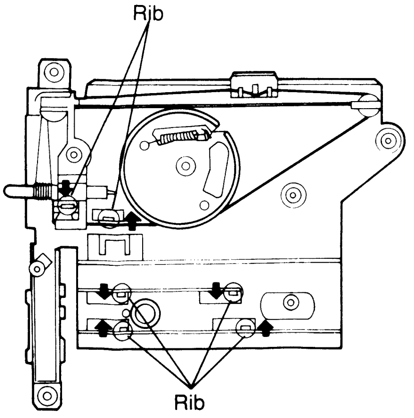


Fig. 7

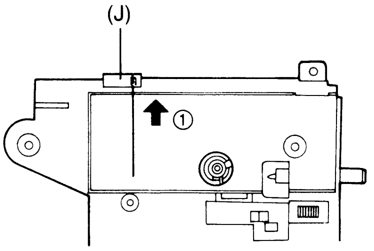
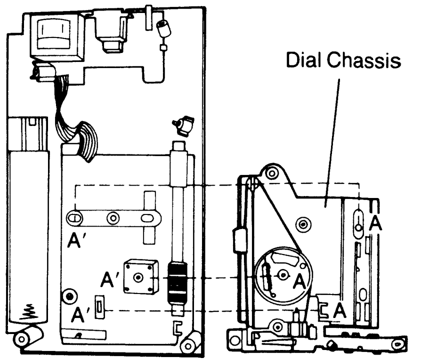


Fig. 8

■ HOW TO REPLACE

(Dial chassis)



Dial Chassis
A′
A′
A′
A
A
A

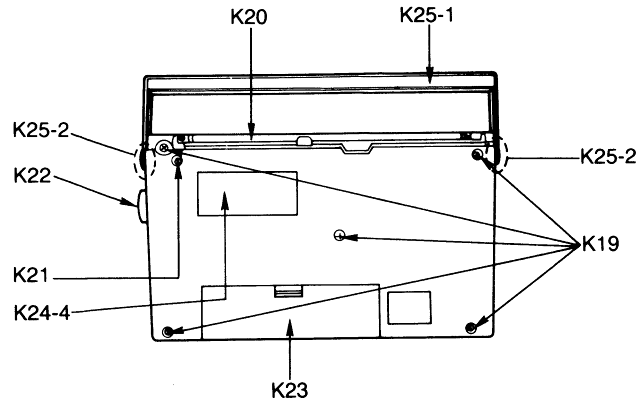
During installation, simultaneously fit in A and A .

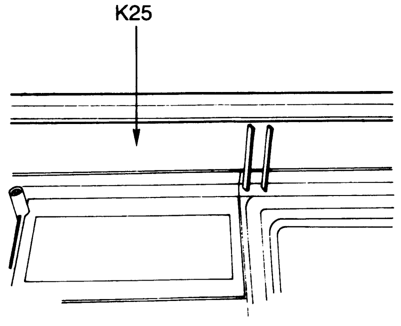
Fig. 9

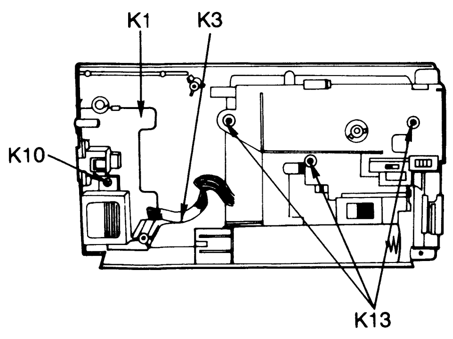
Ref. No.	Shown in Fig. —.	To remove —.	Remove —.
1	1	Front Cabinet	Knob .... (A)×1
2	1		Screw (3×16)mm .... (B)×5
3	2	Speaker	Screw (3×12)mm .... (C)×2
4	2	Dial Chassis (*1)	Turn the tuning shaft until the pointer reaches the left end.
5	2, 3		Remove the dial scale in the direction of the arrow ... (D)×1
6	4		Screw (3×30)mm .... (E)×3
7	5	Band Switch Lever (*2)	Lever .... (F)×1
8	4	Power Supply Circuit Board	Screw (3×12)mm .... (G)×1
9	4		Rib .... (H)×1
10	5	Main Circuit Board	Screw (3×12)mm .... (I)×2
11	6	Handle	Remove the handle both in the direction of arrow.
12	7	Band Knob	Remove the ribs in the direction of arrows.
13	8	Pointer	Pull out the dial pointer in the direction of arrow ①. .... (J)×1

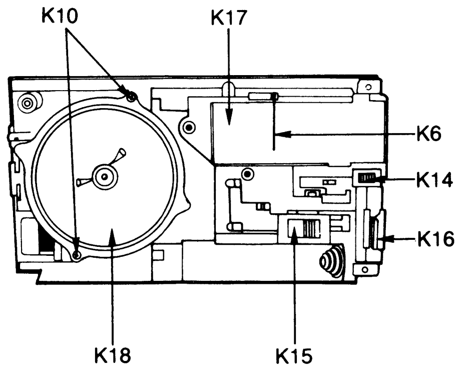
*1. If the double-sided tape on the back of the Dial Scale its not adhesive qualities, replace it.
*2. Note that they may be tightly engaged.

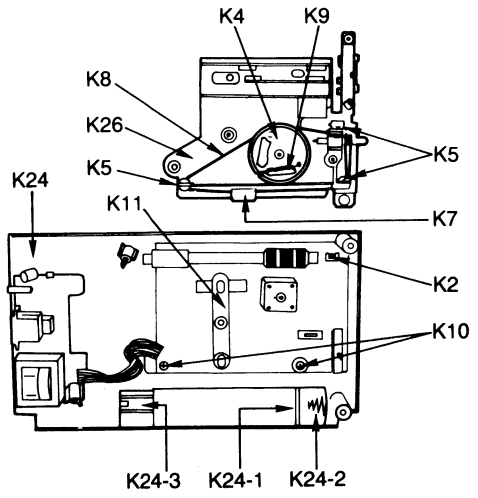
CABINET PARTS LOCATION



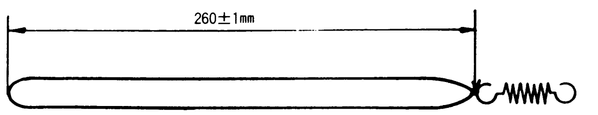


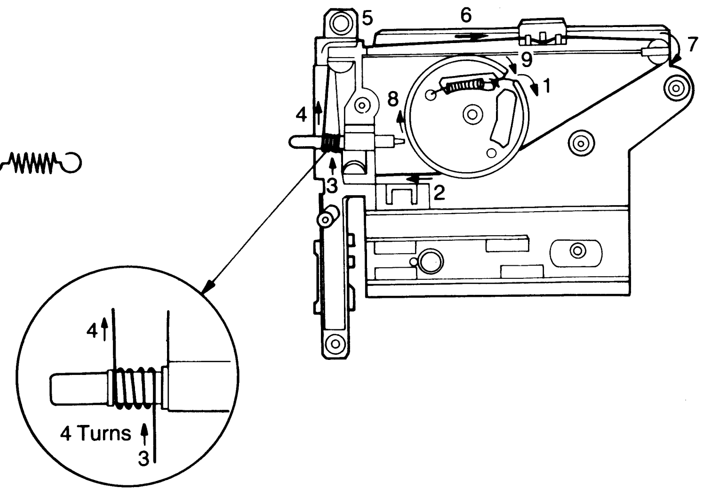






DIAL THREADING





MEASUREMENTS AND ADJUSTMENTS

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set loudness switch to OFF.
3. Set tone switch to OFF.
4. Set band switch to MW, SW or FM.
5. Set radio (power) switch to ON.
6. Set power source voltage to 6 V DC.
7. Output of signal generator should be no higher than necessary to obtain an output reading.

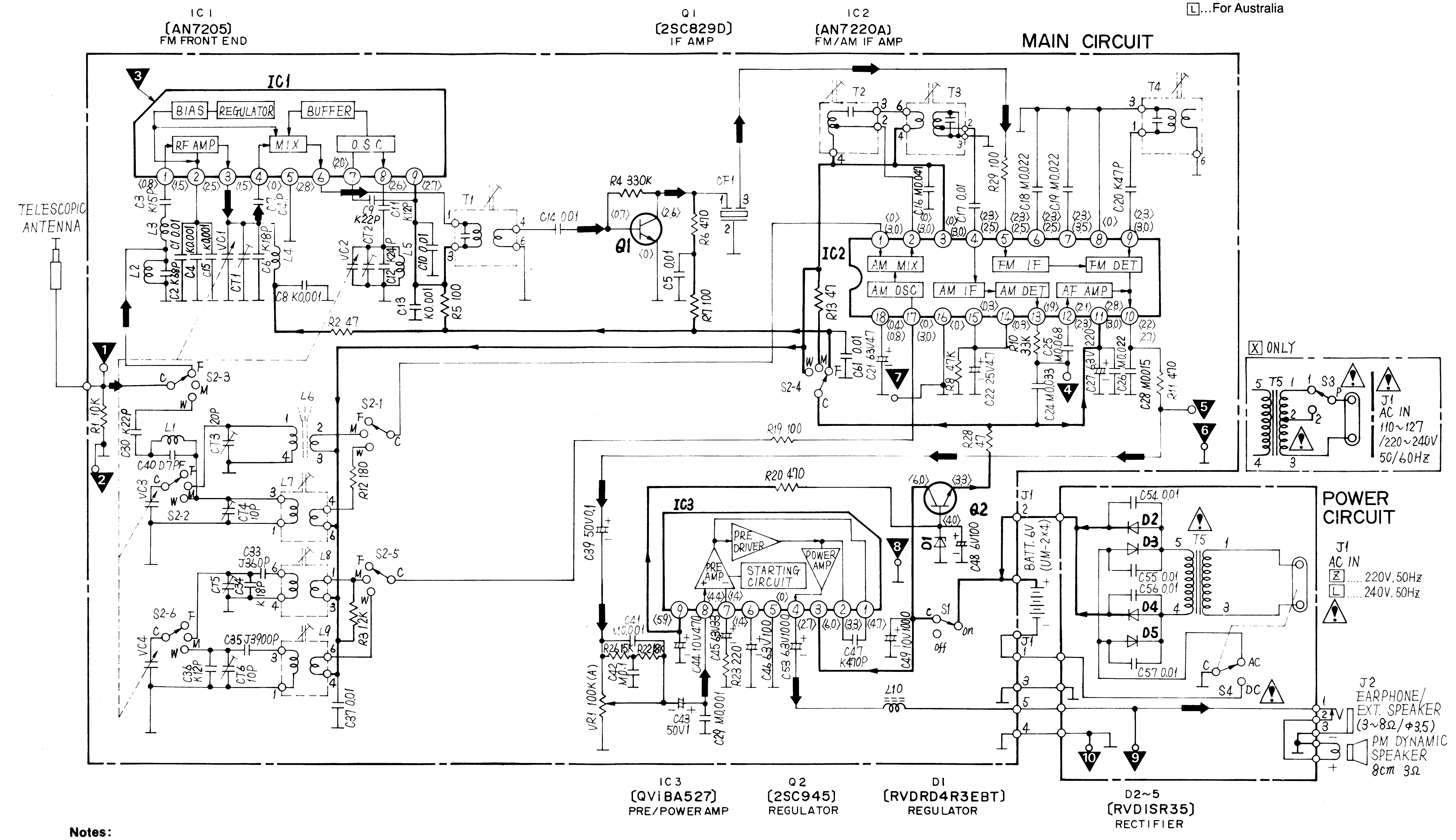
■ LW, MW and SW ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
	AM-IF ALIGNMENT						
(1)	MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. at 400 Hz	Point of non-interference. (on/about 600 kHz)	Output meter across voice coil.	T2 (AM 1st IFT) T3 (AM 2nd IFT)	Adjust for maximum output.
	MW-RF ALIGNMENT						
(2)	MW	〃	511 kHz	Tuning capacitor fully closed.	〃	L8 (MW OSC Coil)	Adjust for maximum output.
(3)	MW	〃	1650 kHz	Tuning capacitor fully open.	〃	CT5 (MW OSC Trimmer)	〃
(4)	MW	〃	550 kHz	Tune to signal.	〃	(*1) L6 (MW ANT Coil)	Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
(5)	MW	〃	1,500 kHz	〃	〃	CT3 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).
	(*1) Cement antenna bobbin with wax after completing alignment.						
	SW-RF ALIGNMENT						
(6)	SW	〃	5.75 MHz	Tuning capacitor fully closed.	〃	L9 (SW OSC Coil)	Adjust for maximum output.
(7)	SW	Connect to test point ▼1 through ceramic capacitor (10 pF) Negative side to test point ▼2.	18.8 MHz	Tuning capacitor fully open.	〃	CT6 (SW OSC Trimmer)	〃
(8)	SW		5.9 MHz	Tune to signal.	〃	L7 (SW ANT Coil)	〃
(9)	SW	〃	18 MHz	〃	〃	CT4 (SW ANT Trimmer)	Adjust for maximum output. Repeat steps (6)~(9).

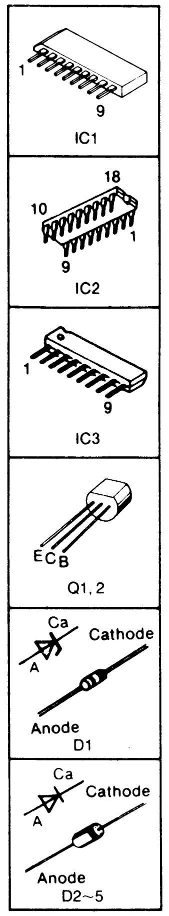
▼
Be sure to fold at the (▼) mark so that mark is on the outside.

SCHEMATIC DIAGRAM

[Z]...For all European areas except United Kingdom, F.R. Germany, France, Italy and Finland
[X]...For Asia, Latin America, Middle East and Africa areas
[L]...For Australia



MAIN CIRCUIT
IC 1
[AN7205]
FM FRONT END
Q 1
[2SC829D]
IF AMP
IC 2
[AN7220A]
FM/AM IF AMP
IC1
BIAS
REGULATOR
BUFFER
RF AMP
MIX
OSC
TELESCOPIC ANTENNA
R4 330K
CF1
Q1
C14 0.01
T1
T2
T3
T4
IC2
AM MIX
FM IF
FM DET
AM OSC
AM IF
AM DET
AF AMP
S2-1
S2-2
S2-3
S2-4
S2-5
S2-6
R19 100
R20 470
IC3
PRE DRIVER
PRE AMP
STARTING CIRCUIT
POWER AMP
Q2
D1
VR1 100K(A)
L10
J1
BATT. 6V (UM-2×4)
S1
ON
OFF
POWER CIRCUIT
T5
D2
D3
D4
D5
J1 AC IN
[Z] 220V, 50Hz
[L] 240V, 50Hz
S4
AC
DC
J2 EARPHONE/ EXT. SPEAKER (3~8Ω/φ3.5)
PM DYNAMIC SPEAKER 8cm 3Ω
[X] ONLY
S3
J1 AC IN 110~127 /220~240V 50/60Hz
IC 3
[QViBA527]
PRE/POWER AMP
Q 2
[2SC945]
REGULATOR
D1
[RVDRD4R3EBT]
REGULATOR
D2~5
[RVD1SR35]
RECTIFIER



1
9
IC1
18
10
9
1
IC2
1
9
IC3
E C B
Q1, 2
Ca
Cathode
A
Anode
D1
Ca
Cathode
A
Anode
D2~5

Notes:

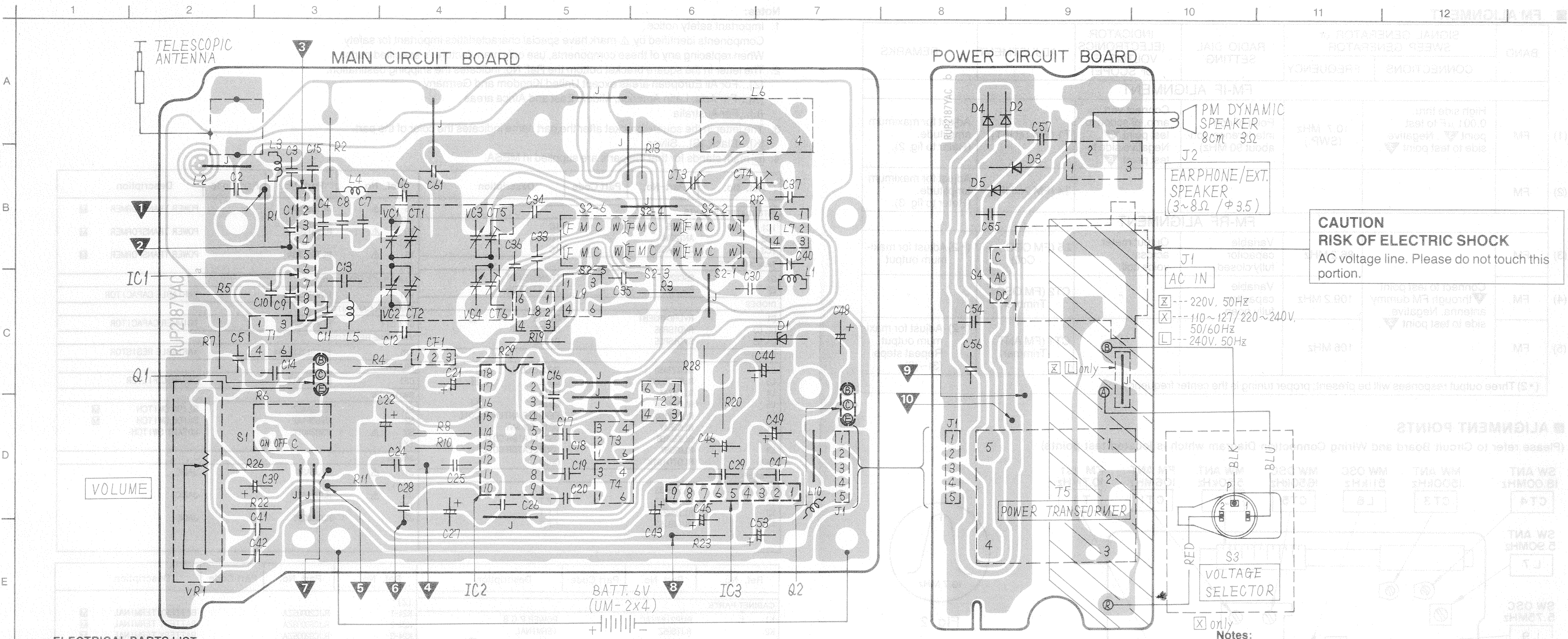
1. S1: Radio ON/OFF switch in "ON" position.
2. S2-1~S2-6: Band select switch in "FM" position. (F...FM, M...MW, W...SW)
3. S3: Voltage select switch in "220~240 V" position. ([X] only)
4. S4: AC/DC IN select switch in "AC IN" position.
5. VR1: Volume control.
6. The mark (▼) shows test point e.g. ▼1 = test point 1.
7. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
   < >...FM position, ( )...AM position
8. Battery current: No signal .... 24 mA
   Maximum output (radio) .... 290 mA
9. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
10. Described in schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and dioes.
    One type number is uded for supply parts number and production parts number which they are identicial.

e.g. Q3
2SA564Q ——————— **Production parts number**
[2SA722-S] ——————— **Supply parts number**

- * **The supply parts number is described alone in the replacement parts list.**
- * **This schematic diagram may be modified at any time with the development of new technology.**

➡ +B Voltage Line
➡ Radio (FM) Signal Line

CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
TELESCOPIC ANTENNA
MAIN CIRCUIT BOARD
POWER CIRCUIT BOARD
RUP2187YAC
IC1
IC2
IC3
Q1
Q2
VOLUME
VR1
S1
ON OFF
BATT. 6V
(UM-2×4)
PM DYNAMIC SPEAKER 8cm 3Ω
J2
EARPHONE/EXT. SPEAKER (3~8Ω/φ3.5)
J1
AC IN
Z---220V, 50Hz
X---110~127/220~240V, 50/60Hz
L---240V, 50Hz
X only
POWER TRANSFORMER
T5
S3
VOLTAGE SELECTOR
BLK
BLU
RED
P
X only

CAUTION
RISK OF ELECTRIC SHOCK
AC voltage line. Please do not touch this portion.

Notes:

- Z ...For All European areas except United Kingdom, F.R. Germany, France, Italy and Finland
- X ...For Asia, Latin America, Middle East and Africa areas
- L ...For Australia

ELECTRICAL PARTS LIST

Numbering System of Resistor

Example:

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value (100Ω)

ERJ	6G	C	J	2R2
Type	Wattage	Shape	Tolerance	Value (2.2Ω)

Resistor Type	Wattage	Tolerance
ERD: Carbon Resistor ERC: Solid Resistor ERF: Incombustible Box-Shaped Wire-Wound Resistor ERG: Metal Oxide-Film Resistor ERM: Wire-Wound Resistor ERO: Superstable Metal Film Resistor ERX: Metal-Film Resistor RRJ: ERJ: Chip Resistor	10 : $^{1}/_{8}$W 25 : $^{1}/_{4}$W 50 : $^{1}/_{2}$W 18 : $^{1}/_{8}$W 14 : $^{1}/_{4}$W 12 : $^{1}/_{2}$W 1 : 1W 2 : 2W 3 : 3W S1 : $^{1}/_{2}$W S2 : $^{1}/_{4}$W 6G : $^{1}/_{10}$W 8G : $^{1}/_{8}$W	F : ±1% G : ±2% J : ±5% K : ±10% H : ±20%

※ Capacity are in microfarads (µF) unless specified otherwise, P=Pico-farads.

※ Resistance are in ohms (Ω), unless specified otherwise, 1K=1,000Ω, 1M=1,000KΩ

Numbering System of Capacitor

Example:

ECKD	1H	102	Z	F
Type	Voltage	Value (1000pF)	Tolerance	Peculiarity

ECEA	50	M	R47
Type	Voltage	Peculiarity	Value (0.47µF)

Capacitor Type	Voltage	Tolerance
ECCD: Ceramic Capacitor (Chitacon) ECKD: Ceramic Capacitor (Chitabari) ECFD: Semiconductor Ceramic Capacitor ECE□: Electrolytic Capacitor ECS□: Tantalum Fixed Electrolytic Capacitor ECQ□: Polystyrenc Film Capacitor ECQS: Polystyrene Film Capacitor ECQS: Polypropylene Film Capacitor ECQV: T.F Capacitor ECU□: RCU□: Chip Capacitor ECBT: Cylindrical Ceramic Capacitor	(ECCD, ECKD Type) 1H : 50 V DC 2H : 500V DC (ECFD Type) C : 12V DC D : 25V DC E : 50V DC (ECQ Type) 05 : 50WV DC 1 : 100WV DC (ECE, ECS Type) 0G : 4V 0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V 1J : 63V 2A : 100V	K : ±10% M : ±20% Z : $^{+80}_{-20}$% J : ±5% G : ±2% F : ±1% C : ±0.25pF D : ±0.5pF F : ±1pF

Ref. No.	Part No.	Part Code
CAPACITORS		
C1	ECKT1H103ZFD	
C2	ECCT1H680K	
C3	ECCT1H150K	
C4	ECKT1H102KBD	
C5	ECKT1H103ZFD	
C6	ECCT1H180KC	
C7	ECCT1H040C	
C8	ECKT1H102KBD	
C9	ECCT1H220KC	
C10	ECKT1H103ZFD	
C11	ECCT1H120KC	
C12	ECCD1H240KC	
C13	ECKT1H102KBD	
C14	ECKT1H103ZFD	
C15	ECKT1H102KBD	
C16	ECFV1E473MD	
C17	ECKT1H103ZFD	
C18, C19	ECFT1C223MD	
C20	ECCT1H470K	
C21	ECEA0JU470	
C22	ECEA1EU4R7	
C24	ECFT1C333MD	
C25	ECFT1C683MD	
C26	ECFT1C223MD	
C27	ECEA0JU221	
C28	ECFT1C153MD	
C29	ECKT1H102MD	
C30	ECCT1H220KC	
C33	ECQP2A361JZ	
C34	ECCT1H180KC	
C35	ECQP2A392JZ	
C36	ECCT1H120KC	
C37	ECKT1H103ZFD	
C39	ECEA1HU0R1	
C40	ECCT1H070DC	
C41	ECKT1H102MD	
C42	ECFV1C104MD	
C43	ECEA1HU010	
C44	ECEA1AU471	
C45	ECEA0JU330	
C46	ECEA0JU101B	
C47	ECKD1H471KB	
C48	ECEA0JU101B	
C49	ECEA1CSZ102	
C53	ECEA0JU102	
C54, C55	ECKT1H103ZFD	
C56, C57	ECKT1H103ZFD	
C61	ECKT1H103ZFD	
RESISTORS		
R1	ERD25FJ103	
R2	ERD25TJ470	
R3	ERD25TJ122T	
R4	ERD25TJ334	
R5	ERD25TJ101	
R6	ERD25TJ471	
R7	ERD25TJ101	
R8	ERD25TJ473	
R10	ERD25FJ332	
R11	ERD25TJ471	
R12	ERD25FJ181	
R13	ERD25TJ470	
R19	ERD25TJ101	
R20	ERD25TJ471	
R22	ERD25TJ183	
R23	ERD25TJ221	
R26	ERD25TJ153	
R28	ERD25TJ470	
R29	ERD25TJ101	

■ FM ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
	FM-IF ALIGNMENT						
(1)	FM	High side thru. 0.001 μF to test point ▼3, Negative side to test point ▼2.	10.7 MHz (SWP.)	Point of non-interference. (on/about 90 MHz)	Connect vert. amp. of scope to test point ▼5. Negative side to test point ▼6.	T1 (FM 1st IFT)	Adjust for maximum amplitude. (Refer to fig. 2).
(2)	FM	〃	〃	〃	〃	T4 (FM 2nd IFT)	Adjust for maximum amplitude. (Refer to fig. 3).
	FM-RF ALIGNMENT						
(3)	FM	Connect to test point ▼1 through FM dummy antenna. Negative side to test point ▼2.	86.2 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L5 (FM OSC Coil)	(*2) Adjust for maximum output.
(4)	FM		109.2 MHz	Variable capacitor fully open.	〃	CT2 (FM OSC Trimmer)	〃
(5)	FM		106 MHz	〃	〃	CT1 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (3)~(6).

(*2) Three output responses will be present; proper tuning is the center frequency.

■ ALIGNMENT POINTS

(Please refer to Circuit Board and Wiring Connection Diagram which is located test points)

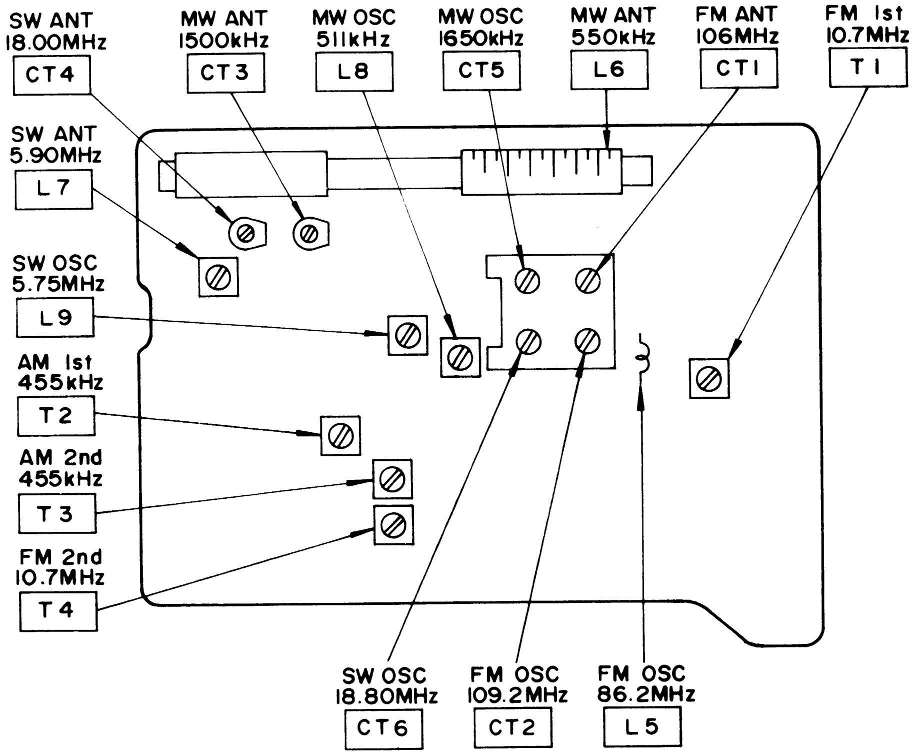


Fig. 1

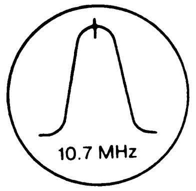


Fig. 2

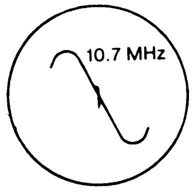


Fig. 3

■ DIAL POINTS (0 Point adjustment)

1. Turn the Variable Capacitor to fully counter-clockwise.
2. Position the pointer over the slot.

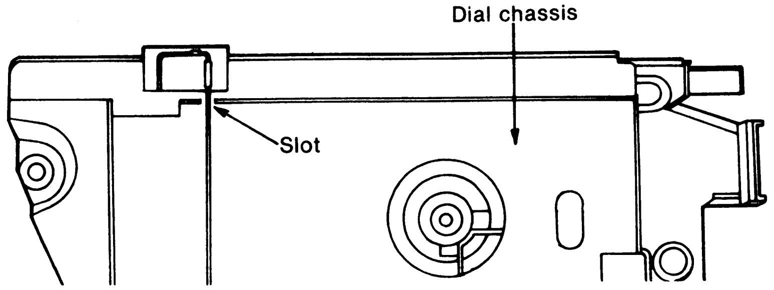


Fig. 4

■ REPLACEMENT PARTS LIST

Notes:

1. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety.
   When replacing any of these components, use only manufacturer's specified parts.
2. The letter in the square bracket bottom the Ref. No. indicates the shipping destination.
   [Z]...For All European areas except United Kingdom and Germany
   [X]...For Asia, Latin America, Middle East and Africa areas
   [L]...For Australia
3. The letter in the square bracket after the part name indicates the color of the part.
   [K]...Black, [S]...Silver
4. 🄼 mark stands for that the parts are supplied in MESA.

Ref. No.	Part No.	Part Code	Description
INTEGLATED CIRCUITS			
IC1	AN7205		IC
IC2	AN7220A		IC
IC3	QVIBA527		IC
TRANSISTORS			
Q1	2SC829D		TRANSISTOR
Q2	2SC945		TRANSISTOR
DIODES			
D1	RVDRD4R3EBT		DIODE 🄼
D2, D3	RVD1SR35		DIODE
D4, D5	RVD1SR35		DIODE
COILS			
L1	RLQY24S1		CHOKE COIL
L3	RLQY18S3W		COIL 🄼
L4	RLD4Y44		COIL
L5	RLD4Y43W		COIL 🄼
L6	RLF2W156		FERRITE ANTENNA COIL
L7	RLA3B41		COIL, SW ANT
L8	RL02B108		OSCILLATOR COIL
L9	RL03B87		OSCILLATOR COIL
L10	RLQZD101K		COIL
TRANSFORMERS			
T1	RL14B153		I.F.T
T2	RL12B207		I.F.T
T3	RL12B217		I.F.T
T4	RL14B153		I.F.T

Ref. No.	Part No.	Part Code	Description
T5 ⚠ [XL]	RLT512E1A		POWER TRANSFORMER 🄼
T5 ⚠ [Z]	RLT512G3A		POWER TRANSFORMER 🄼
T5 ⚠ [X]	RLT512X3A		POWER TRANSFORMER 🄼
VARIABLE CAPACITORS			
VC1	RCV4RC2R1A		VARIABLE CAPACITOR
TRIMMER CAPACITORS			
CT3, CT4	RCVTZ20F		TRIMMER CAPACITOR
VARIABLE RESISTORS			
VR1	EWASL2C95A14		VARIABLE RESISTOR
FILTERS			
CF1	RVF107WAZ		CERAMIC FILTER
SWITCHES			
S1	RSS2A43Z		SLIDE SWITCH 🄼
S2	RSS3F14Z		SLIDE SWITCH 🄼
S3 ⚠ [X]	RSR2A01Y		ROTARY SWITCH
JACKS			
J1 ⚠ [X,XL]	RJJ1A3Y		JACK
J1 ⚠ [Z]	RJJ1A4ZD		JACK
J2	RJJ1D20Y		JACK

Ref. No.	Part No.	Part Code	Description
CABINET PARTS			
K1 ⚠	RUP2187YAC		POWER P.C.B
K2	RJT865Z		TERMINAL
K3	WBB5CB-9K1K1		CORD 🄼
K4	RDD414YC		DRUM 🄼
K5	RDR54Z		ROLLER, DIAL 🄼
K6	RDP289Z		POINTER [S] 🄼
K7	RDA104Z		HOLDER 🄼
K8	RZZ0303		DIAL ROPE
K9	RDS4060A		SPRING
K10	XTV3+10G		SCREW
K11	RUB464ZA		LEVER 🄼
K13	XTB3+30CFN		TAPPING SCREW
K14	RBD439ZA-0		KNOB [K] 🄼
K15	RBD440ZA-0		KNOB [K] 🄼
K16	RBD441ZA-0		KNOB [K] 🄼
K17 [Z]	RKD713WA-0		SCALE [K] 🄼
K17 [X,XL]	RKD713XA-0		SCALE [K] 🄼
K18	RAS8P30ZA-D		SPEAKER 🄼
K19	XTB3+16CFZ		SCREW
K20	XEARK162EJY		TELESCOPIC ANTENNA 🄼
K21	XYN3+F25FN		SCREW 🄼
K22	RBN704Z		KNOB [K] 🄼
K23	RYNF1630LZKS		BATTERY COVER ASS'Y [K] 🄼
K24 [X]	RYFF1630JXKS		REAR CABINET ASS'Y [K] 🄼
K24 [XL]	RYFF1630JXLK		REAR CABINET ASS'Y [K] 🄼
K24	RYFF1630JZKS		REAR CABINET ASS Y [K] 🄼

Ref. No.	Part No.	Part Code	Description
[Z]			
K24-1	RJC20005ZA		BATTERY TERMINAL 🄼
K24-2	RJC60008ZA		BATTERY TERMINAL 🄼
K24-3	RJC92005ZA		BATTERY TERMINAL 🄼
K24-4 [XL]	RGT1250YA-0		NAME PLATE 🄼
K25 [X,XL]	RYMF1630JXKS		FRONT CABINET ASS'Y [K] 🄼
K25 [Z]	RYMF1630JZKS		FRONT CABINET ASS'Y [K] 🄼
K25-1	RYHF1630LZKS		HANDLE [K] 🄼
K25-2	RKX165Z		SPACER
K26	RZAF1630LZKS		CHASSIS ASS'Y [K] 🄼
ACCESORIES			
A1 ⚠ [X]	QFC1081		AC CORD
A1 ⚠ [Z]	RJA20Z		AC CORD
A1 ⚠ [XL]	RJA26Z		AC CORD
A2 [Z]	RQX4925ZA		OPERATING INSTRUCTIONS 🄼
A2 [X,XL]	RQX4948ZA		INSTRUCTION BOOK 🄼
PACKINGS			
P1	RPN9548ZA		PAD COMPLETE 🄼
P2 [X,XL]	RPK2464ZA		GIFT BOX 🄼
P2 [Z]	RPK2468ZA		GIFT BOX 🄼
P3	XZB36X35A04		POLYETHYLENE COVER

MESA
H.S ZXL Printed in Japan Ⓕ

ORDER NO. GAD8612078A2

Service Manual

Radio

RF-1630J

(Black)

FM-MW-SW 3 Band Portable Receiver

- Please use this manual together with the service manual for model No. RF-1630J order No. GAD8610065C8.
- This service manual indicates the main differences between; Original RF-1630J (for [Z] mark area) and RF-1630J [G] for F.R. Germany/[I] for Italy.

This is the Service Manual for the following areas.

[G]...For F.R. Germany

[I]...For Italy

■ PARTS COMPARISON TABLE

NOTES: 1. Important safety notice.
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
2. The letter in the circle after the part name indicates the color of the part.
[K]...Black
3. ● mark stands for that the parts are supplied from MESA.
4. [G]...For F.R. Germany, [I]...For Italy.

Ref. No.	Description	Part Number		Remarks
		RF-1630J[Z] (Original)	**RF-1630J[G][I]**	
L5	Coil	RLD4Y43W	**RL04N198**	
L12, 13	Coil ⚠	———	**RLQZB470K**	
L14	Coil	———	**RLQZD101K**	
C11	Capacitor (50 V, 39 pF)	ECCT1H120KC	**ECCT1H390KC**	
C12	Capacitor (50 V, 22 pF)	ECCD1H240KC	**ECCT1H220KC**	
C26	Capacitor (16 V, 0.047 μF)	ECFT1C223MD	**ECFT1C473MD**	
C27	Capacitor (6.3 V, 470 μF)	ECEA0JU221	**ECEA0JU471**	
C37	Capacitor (16 V, 0.022 μF)	ECKT1H103ZFD	**ECFT1C223MD**	
R3	Resistor (560Ω)	ERD25TJ122T	**ERD25TJ561**	
R14	Resistor (1.2 kΩ)	———	**ERD25VJ122**	Added
R15	Resistor (1.2 kΩ)	———	**ERD25TJ122T**	Added
●K1	Power P.C.B. ⚠	RUP2187YAC	**RUP2187XAC**	
K8	Dial Rope	RZZ0303	**RDZ05A**	Correction
●K17	Scale [K]	RKD713WA-0	**RKD713VA-0**	
●K24	Rear Cabinet Ass'y [K]	RYFF1630JZKS	**RYFF1630JZGK**	[G] only
			RYFF1630JZIK	[I] only
●K24-4	Name Plate [K]	———	**RGT1250XA-0**	[G] only
			RGT1250WA-0	[I] only

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka, Japan

MEASUREMENTS AND ADJUSTMENTS

■ LW, MW and SW ALIGNMENT

Z...For All European areas except United Kingdom & Germany.
G...For F.R. Germany.
I...For Italy.

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
	MW-RF ALIGNMENT						
(2)	MW	〃	511 kHz	Tuning capacitor fully closed.	〃	L8 (MW OSC Coil)	Adjust for maximum output.
(3)	MW	〃	1650 kHz	Tuning capacitor fully open.	〃	CT5 (MW OSC Trimmer)	〃
(4)	MW	〃	550 kHz	Tune to signal	〃	(*1) L6 (MW ANT Coil)	Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
(5)	MW	〃	1500 kHz	〃	〃	CT3 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).

(*1) Cement antenna bobbin with wax after completing alignment.

RF-1630J Z

⬇

(2)	MW	〃	**516 kHz**	Tuning capacitor fully closed.	〃	L8 (MW OSC Coil)	Adjust for maximum output.
(3)	MW	〃	**1636 kHz**	Tuning capacitor fully open.	〃	CT5 (MW OSC Trimmer)	〃
(4)	MW	〃	550 kHz	Tune to signal.	〃	(*1) L6 (MW ANT Coil)	Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
(5)	MW	〃	1500 kHz	〃	〃	CT3 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (2)~(5).

(*1) Cement antenna bobbin with wax after completing alignment.

RF-1630J I only

■ FM ALIGNMENT

	BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
		CONNECTIONS	FREQUENCY				
	FM-RF ALIGNMENT						
(3)	FM	Connect to test point ▼1 through FM dummy antenna. Negative side to test point ▼2.	86.2 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L5 (FM OSC Coil)	(*2) Adjust for maximum output.
(4)	FM		109.2 MHz	Variable capacitor fully open.	〃	CT2 (FM OSC Trimmer)	〃
(5)	FM		106 MHz	〃	〃	CT1 (FM ANT Trimmer)	(*2) Adjust for maximum output. Repeat steps (3)~(6).

(*2) Three output responses will be present; proper tuning is the center frequency.

RF-1630J Z

⬇

(3)	FM	Connect to test point ▼1 through FM dummy antenna. Negative side to test point ▼2.	**87,35 MHz**	Variable capacitor fully closed.	Output meter across voice coil.	L5 (FM OSC Coil)	(*2) Adjust for maximum output.
(4)	FM		**108,35 MHz**	Variable capacitor fully open.	〃	CT2 (FM OSC Trimmer	〃
(5)	FM		106 MHz	〃	〃	CT1 (FM ANT Trimmer	(*2) Adjust for maximum output. Repeat steps (3)~(6).

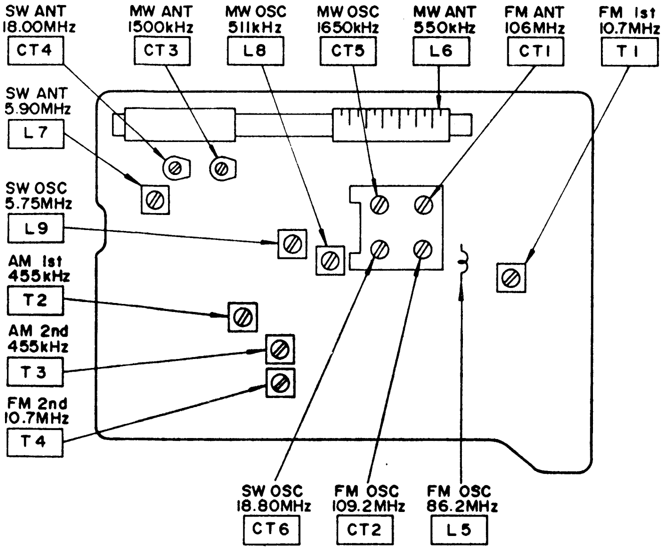
(*2) Three output responses will be present; proper tuning is the center frequency.

RF-1630J G I

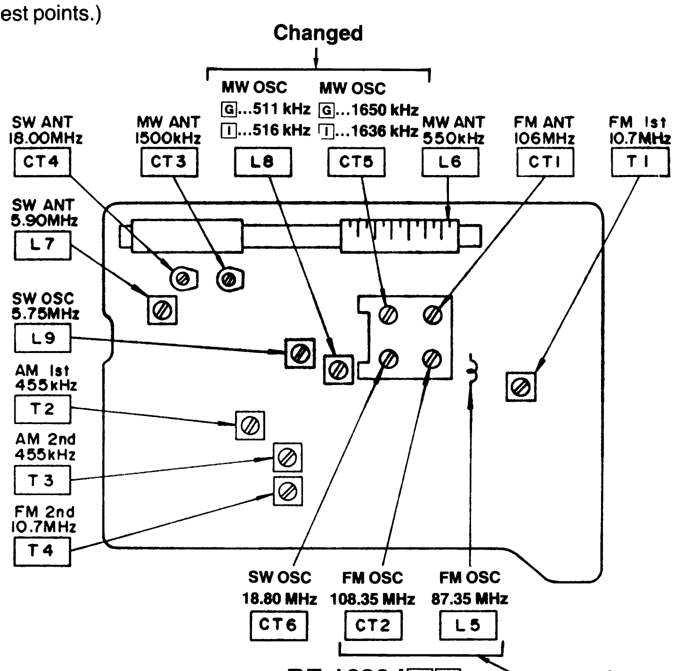
■ ALIGNMENT POINTS

(Please refer to Circuit Board and Wiring Connection Diagram which is located test points.)

[Z]...For All European areas except United Kingdom & Germany.
[G]...For F.R. Germany.
[I]...For Italy.


SW ANT 18.00MHz CT4
MW ANT 1500kHz CT3
MW OSC 511kHz L8
MW OSC 1650kHz CT5
MW ANT 550kHz L6
FM ANT 106MHz CT1
FM 1st 10.7MHz T1
SW ANT 5.90MHz L7
SW OSC 5.75MHz L9
AM 1st 455kHz T2
AM 2nd 455kHz T3
FM 2nd 10.7MHz T4
SW OSC 18.80MHz CT6
FM OSC 109.2MHz CT2
FM OSC 86.2MHz L5

RF-1630J[Z]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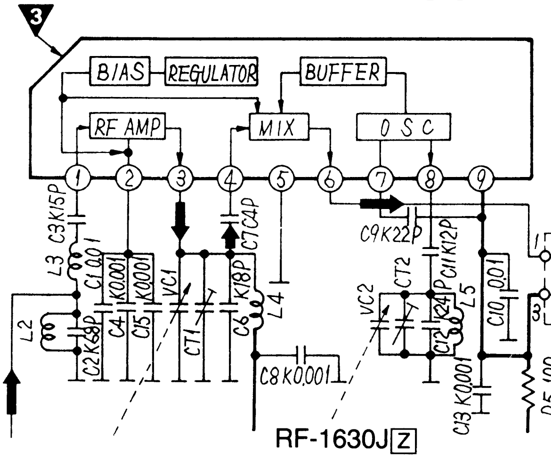
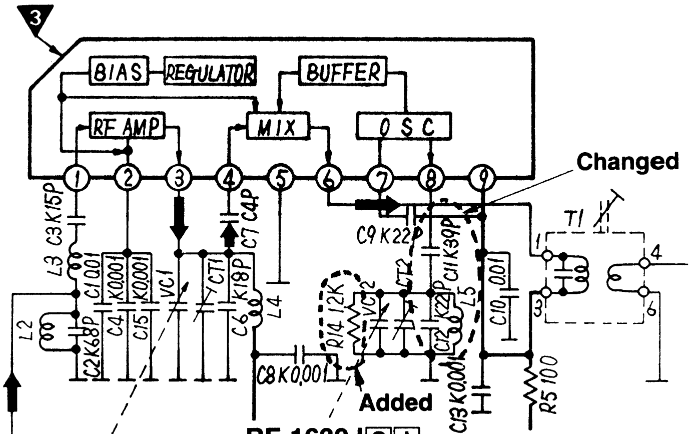
MW OSC [G]...511 kHz [I]...516 kHz
MW OSC [G]...1650 kHz [I]...1636 kHz
SW ANT 18.00MHz CT4
MW ANT 1500kHz CT3
L8
CT5
MW ANT 550kHz L6
FM ANT 106MHz CT1
FM 1st 10.7MHz T1
SW ANT 5.90MHz L7
SW OSC 5.75MHz L9
AM 1st 455kHz T2
AM 2nd 455kHz T3
FM 2nd 10.7MHz T4
SW OSC 18.80 MHz CT6
FM OSC 108.35 MHz CT2
FM OSC 87.35 MHz L5
Changed

RF-1630J[G][I]

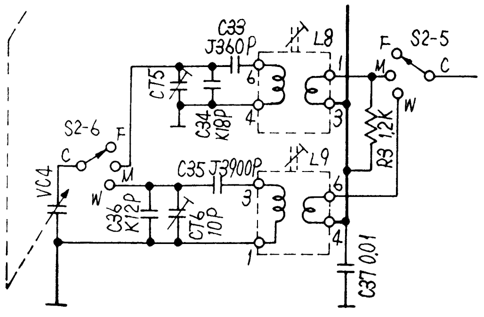
SCHEMATIC DIAGRAM


3
BIAS
REGULATOR
BUFFER
RF AMP
MIX
OSC
1 2 3 4 5 6 7 8 9
C3 K15P
L3
C1 0.01
C4 K0.001
C5 K0.001
VC1
CT1
C6 K18P
C7 C4P
L4
L2
C2 K68P
C8 K0.001
C9 K22P
CT2
VC2
C11 K12P
C12 K24P
L5
C10 0.01
C13 K0.001
R5 100
T1
1 3 4 6

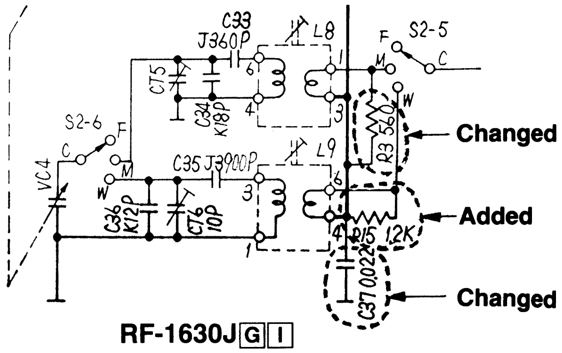
RF-1630J[Z]


3
BIAS
REGULATOR
BUFFER
RF AMP
MIX
OSC
1 2 3 4 5 6 7 8 9
Changed
C3 K15P
L3
C1 0.01
C4 K0.001
C5 K0.001
VC1
CT1
C6 K18P
C7 C4P
L4
L2
C2 K68P
C8 K0.001
C9 K22P
R14 12K
VC2
CT2
C11 K39P
C12 K24P
L5
C10 0.01
C13 K0.001
R5 100
Added
T1
1 3 4 6

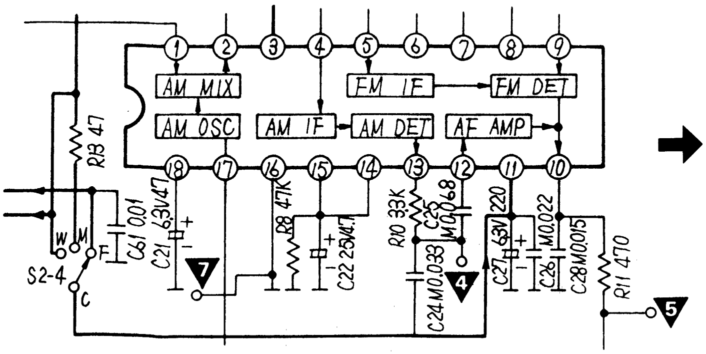
RF-1630J[G][I]


C33 J360P
L8
F M C S2-5
W
CT5
C34 K18P
R3 1.2K
S2-6
F C M W
VC4
C35 J3900P
L9
C36 K12P
CT6 10P
C37 0.01
1 3 4 6

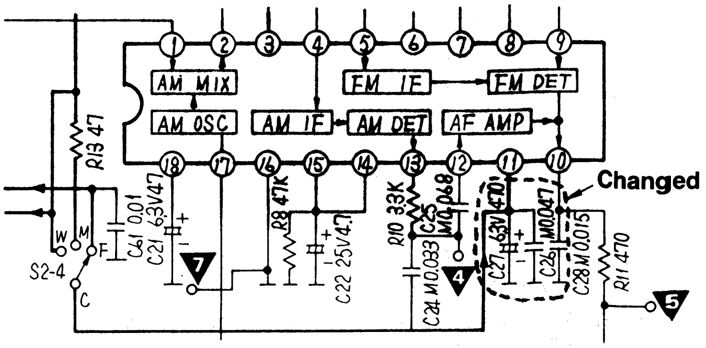
RF-1630J[Z]


C33 J360P
L8
F M C S2-5
W
CT5
C34 K18P
R3 560
Changed
S2-6
F C M W
VC4
C35 J3900P
L9
C36 K12P
CT6 10P
R15 12K
Added
C37 0.022
Changed
1 3 4 6

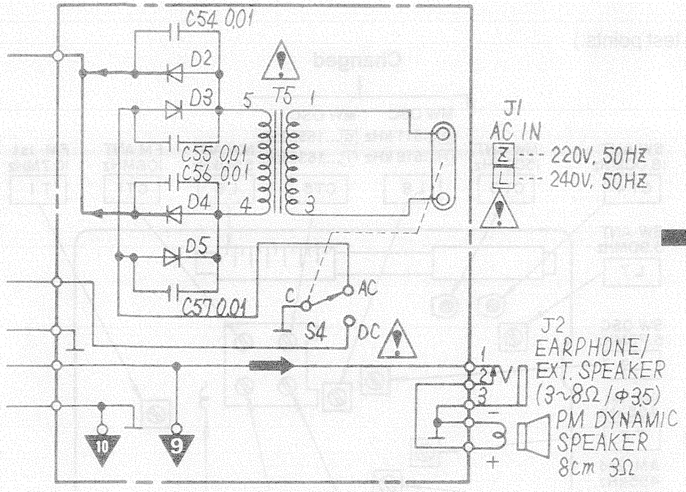
RF-1630J[G][I]


1 2 3 4 5 6 7 8 9
AM MIX
FM IF
FM DET
AM OSC
AM IF
AM DET
AF AMP
18 17 16 15 14 13 12 11 10
R13 47
C61 0.01
C21 63V47
R8 47K
C22 25V4.7
R10 33K
C25 M0.068
C24 M0.033
C27 6.3V 220
C26 M0.022
C28 M0.015
R11 470
S2-4
W M F C
7
4
5

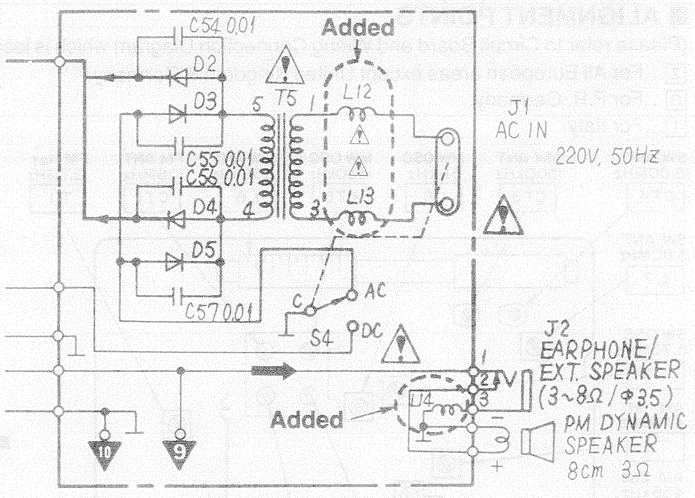
RF-1630J[Z]


1 2 3 4 5 6 7 8 9
AM MIX
FM IF
FM DET
AM OSC
AM IF
AM DET
AF AMP
18 17 16 15 14 13 12 11 10
Changed
R13 47
C61 0.01
C21 63V47
R8 47K
C22 25V4.7
R10 33K
C25 M0.068
C24 M0.033
C27 6.3V 470
C26 M0.047
C28 M0.015
R11 470
S2-4
W M F C
7
4
5

RF-1630J[G][I]

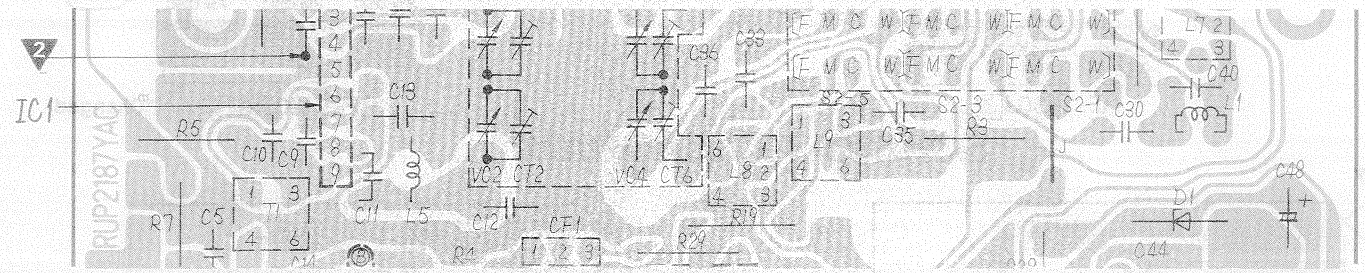

C54 0.01
D2
D3
T5
5
1
C55 0.01
C56 0.01
D4
4
3
D5
C57 0.01
J1
AC IN
Z --- 220V, 50Hz
L --- 240V, 50Hz
C
AC
S4
DC
J2
EARPHONE/
EXT. SPEAKER
(3~8Ω/φ3.5)
1
2
3
PM DYNAMIC
SPEAKER
8cm 3Ω
10
9

RF-1630J[Z]

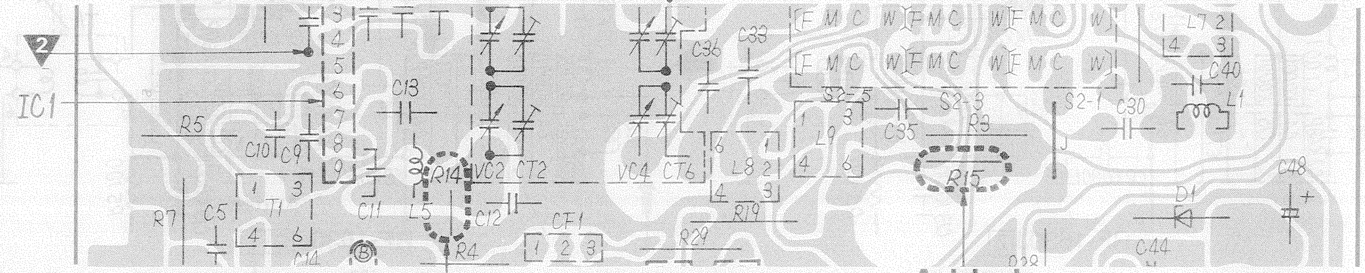

Added
C54 0.01
D2
D3
T5
5
1
L12
L13
C55 0.01
C56 0.01
D4
4
3
D5
C57 0.01
J1
AC IN
220V, 50Hz
C
AC
S4
DC
J2
EARPHONE/
EXT. SPEAKER
(3~8Ω/φ3.5)
Added
L14
1
2
3
PM DYNAMIC
SPEAKER
8cm 3Ω
10
9

RF-1630J[G][I]

CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM


2
IC1
R5
C10
C9
C13
R7
C5
T1
C14
C11
L5
C12
R4
VC2
CT2
VC4
CT6
C36
C33
L8
R19
CF1
R29
F M C W
S2-5
S2-3
S2-1
L9
C35
R3
C30
L7
C40
L1
C48
D1
C44
RUP2187YAC

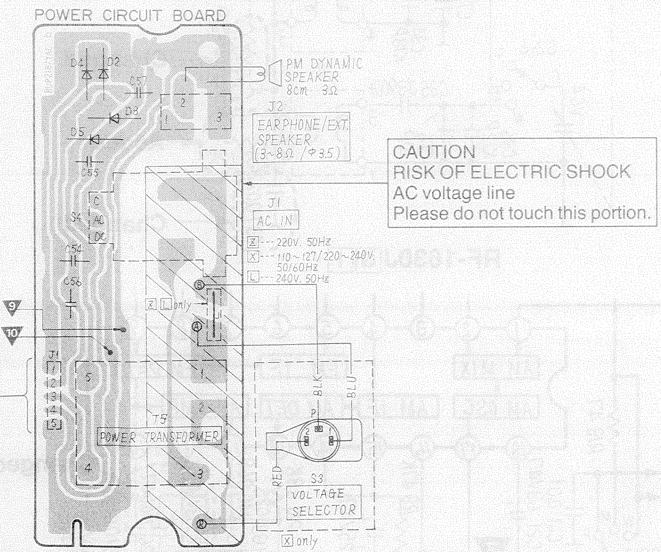
RF-1630J[Z]


2
IC1
R5
C10
C9
C13
R7
C5
T1
C14
C11
L5
R14
C12
R4
VC2
CT2
VC4
CT6
C36
C33
L8
R19
CF1
R29
F M C W
S2-5
S2-3
S2-1
L9
C35
R3
R15
C30
L7
C40
L1
C48
D1
C44

Added

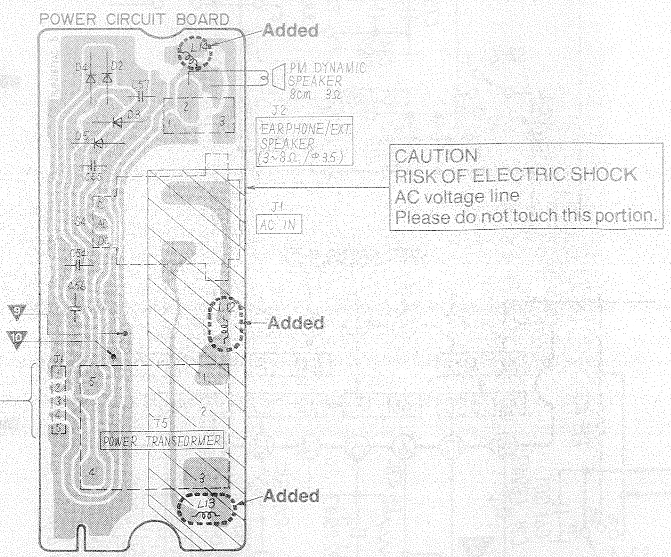
RF-1630J[G][I]

Added


POWER CIRCUIT BOARD
D4
D2
C57
D3
D5
C55
S4
C
AC
DC
C54
C56
PM DYNAMIC
SPEAKER
8cm 3Ω
J2
EARPHONE/EXT.
SPEAKER
(3~8Ω/φ3.5)
J1
AC IN
Z --- 220V, 50Hz
X --- 110~127/220~240V, 50/60Hz
L --- 240V, 50Hz
Z L only
9
10
J4
1
2
3
4
5
T5
POWER TRANSFORMER
BLK
BLU
RED
S3
VOLTAGE
SELECTOR
X only

CAUTION
RISK OF ELECTRIC SHOCK
AC voltage line
Please do not touch this portion.

RF-1630J[Z]


POWER CIRCUIT BOARD
Added
L14
D4
D2
C57
D3
D5
C55
S4
C
AC
DC
C54
C56
PM DYNAMIC
SPEAKER
8cm 3Ω
J2
EARPHONE/EXT.
SPEAKER
(3~8Ω/φ3.5)
J1
AC IN
L12
Added
9
10
J1
T5
POWER TRANSFORMER
L13
Added

CAUTION
RISK OF ELECTRIC SHOCK
AC voltage line
Please do not touch this portion.

RF-1630J[G][I]

[Z]...For All European areas except United Kingdom & Germany.
[G]...For F.R. Germany.
[I]...For Italy.

MESA
H.S/K.K

G | I

Printed in Japan Ⓕ

D

ORDER NO. GAD8511016C8

Service Manual

Radio

RF-1650J
(Black)

FM-MW-SW 3 Band Portable Receiver

This is the Service Manual for the following areas.

- [Z] ...For all European areas except United Kingdom, F.R. Germany, France, Italy and Finland.
- [I] ...For Italy and Finland.
- [X] ...For Asia, Latin America, Middle East and Africa areas.

■ SPECIFICATIONS

General:

Power Requirement:	AC; [Z] [I] ...... 220 V, 50 Hz [X] .... 110~127/220~240 V, 50/60 Hz Battery; [Z] [I] .... 6 V (Four "C" Size Flash light Batteries) (Panasonic UM-2 or equivalent) [X] ...... 6 V (Four "C" Size Flashlight Batteries) (National UM-2 or equivalent)
Power Consumption:	4 W (AC only)
Power Output:	[Z] [I] ..... 1.2 W .... MPO 1 W ...... RMS (max.) [X] .... 1.4 W.... MPO 1.2 W.... RMS (max.)
Speaker:	10 cm PM Dynamic Speaker (3Ω)
Output:	Earphone/External Speaker; 3~8Ω/Ø3.5
Dimensions:	266 mm (W)×143 mm (H)×81 mm (D)
Weight:	960 g without batteries

Radio Section:

Radio Frequency Range:	[Z] [I] ...... FM; 87.5~108 MHz MW; 520~1610 kHz (577~186 m) SW; 5.9~18 MHz (50.8~16.7 m) [X] .... FM; 88~108 MHz MW; 530~1605 kHz (566~187 m) SW; 5.9~18 MHz (50.8~16.7 m)
Intermediate Frequency:	FM; 10.7 MHz AM (MW/SW); 455 kHz
Sensitivity:	FM; 2.8µV/50 mW output (−3 dB Limit Sens) MW; 89µV/m/50 mW output SW; 7µV/50 mW output

Design and specifications are subject to change without notice.

National / Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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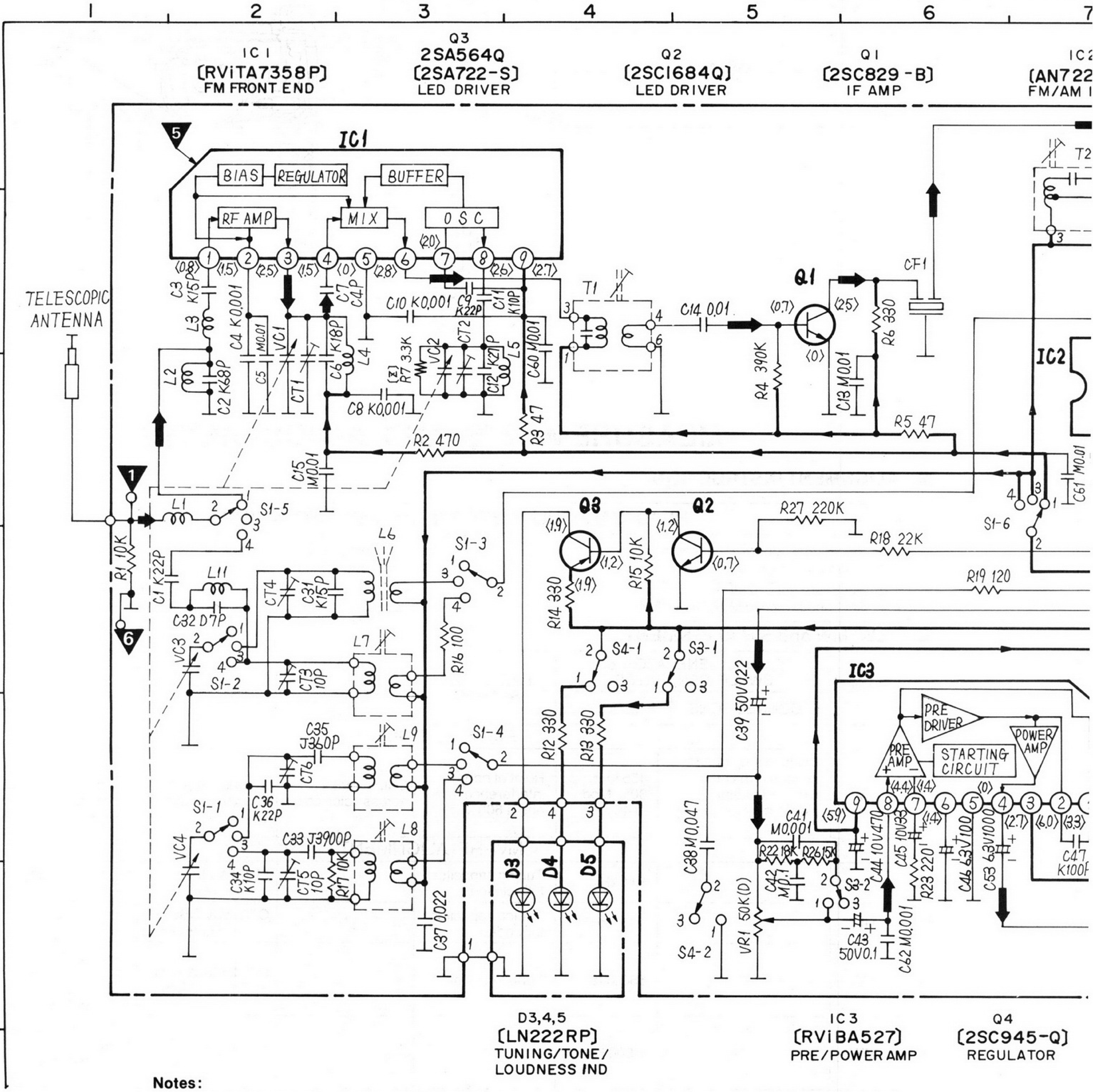
SCHEMATIC DIAG


1
2
3
4
5
6
7
A
B
C
D
E
F
IC1
(RViTA7358P)
FM FRONT END
Q3
2SA564Q
(2SA722-S)
LED DRIVER
Q2
(2SC1684Q)
LED DRIVER
Q1
(2SC829-B)
IF AMP
IC2
(AN722
FM/AM
BIAS
REGULATOR
BUFFER
RF AMP
MIX
OSC
TELESCOPIC ANTENNA
T1
CF1
T2
IC2
IC3
PRE DRIVER
PRE AMP
STARTING CIRCUIT
POWER AMP
S1-1
S1-2
S1-3
S1-4
S1-5
S1-6
S3-1
S3-2
S4-1
S4-2
VR1 50K(D)
D3
D4
D5
D3,4,5
(LN222RP)
TUNING/TONE/LOUDNESS IND
IC3
(RViBA527)
PRE/POWER AMP
Q4
(2SC945-Q)
REGULATOR

Notes:

1. S1-1~S1-6: Band switch in "FM" position.
   (1...FM, 3...MW, 4...SW)
2. S2-1, S2-2: Radio ON/OFF switch in "ON" position.
3. S3-1, S3-2: LOUDNESS ON/OFF switch in "OFF" position.
4. S4-1, S4-2: TONE HIGH/LOW switch in "HIGH" position.
5. S5: AC/DC IN select switch in "AC IN" position.
6. S6 ☒: Voltage Selector
7. VR1: Volume control.
8. The mark (▼) shows test point e.g. ▼1 = test point 1.
9. DC voltage measurement are taken with electronics voltmeter from negative terminal of battery.
   < >...FM position, ( )...AM position
10. Battery current: No signal 32mA
    Maximum output (radio) 290mA
11. Important safety notice
    Components identified by ⚠ mark have specia
    characteristics important for safety.
    When replacing any of these components, use
    manufacturer's specified parts.
12. Described in schematic diagram are two types
    the supply parts number and production parts
    transistors and dioes.
    One type number is uded for supply parts numl
    production parts number which they are identic
    ☒...For Asia, Latain America, Middle East and Africa
    ☒...For all European areas except United Kingdom,
    France, Italy and Finland.
    ☐...For Italy and Finland.

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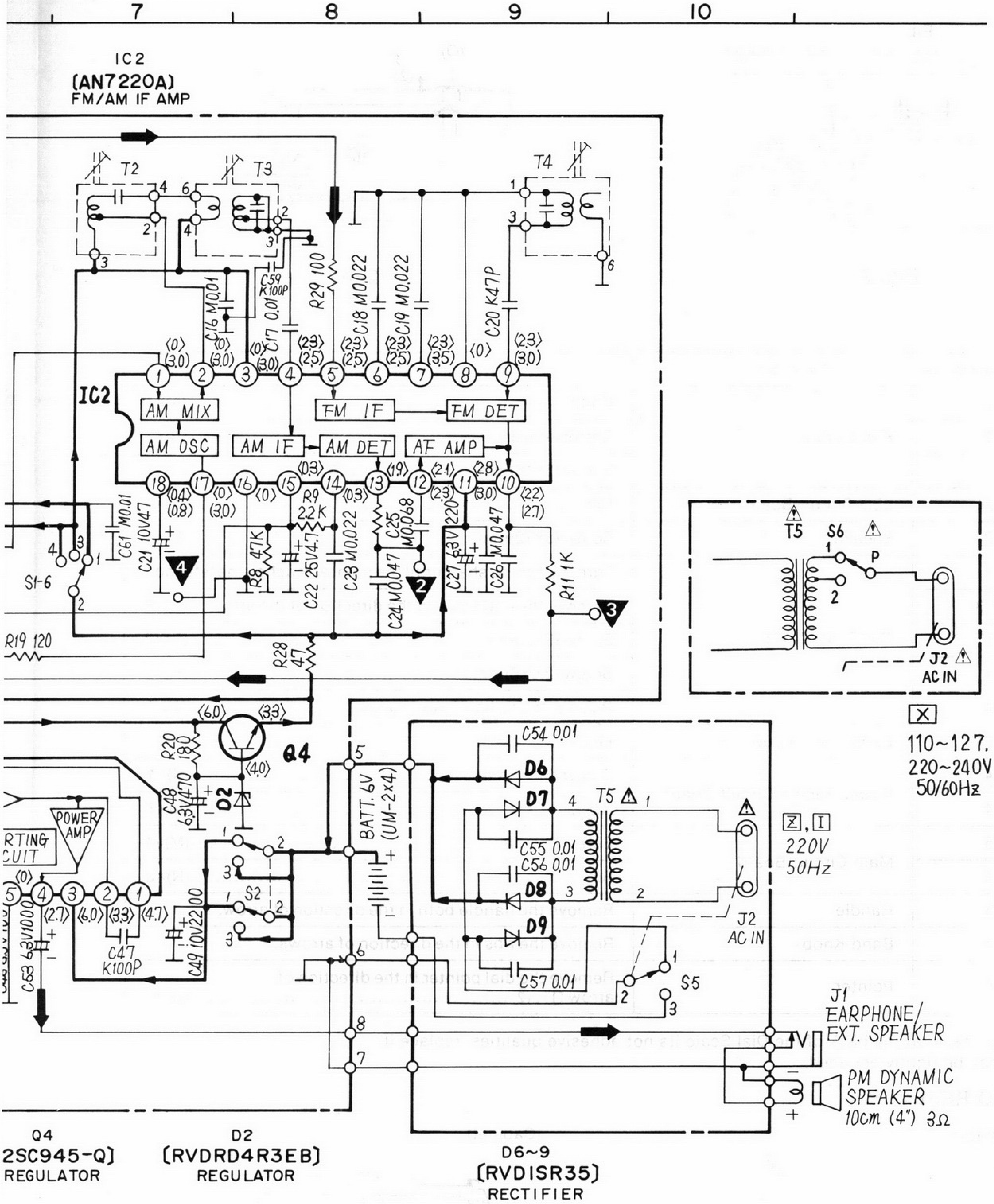
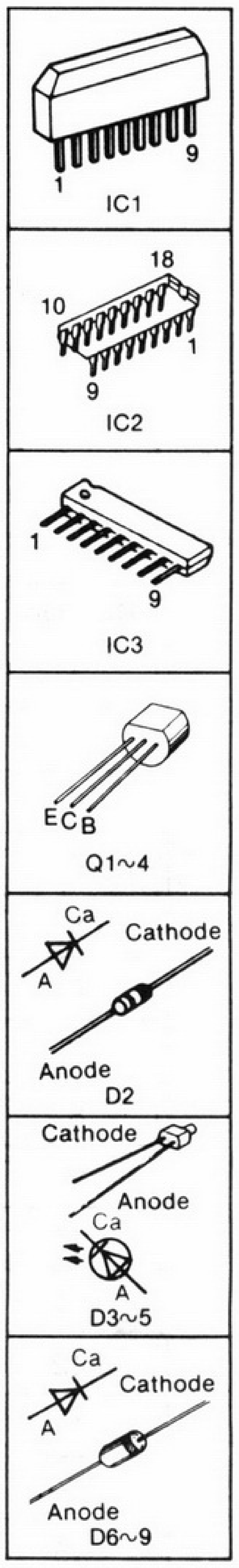
IC DIAGRAM


7
8
9
10
IC2
(AN7220A)
FM/AM IF AMP
T2
T3
T4
C16 M0.01
C17 0.01
C59 K100P
R29 100
C18 M0.022
C19 M0.022
C20 K47P
IC2
AM MIX
FM IF
FM DET
AM OSC
AM IF
AM DET
AF AMP
C61 M0.01
C21 10V47
R9 2.2K
R8 47K
C22 25V4.7
C23 M0.022
C25 M0.068
C24 M0.047
C27 6.3V 220
C26 M0.047
R11 1K
S1-6
R19 120
R28 47
Q4
R20 180
C48 6.3V470
D2
POWER AMP
C47 K100P
C53 6.3V1000
C49 10V22.00
S2
BATT. 6V (UM-2×4)
C54 0.01
D6
D7
C55 0.01
C56 0.01
D8
D9
C57 0.01
T5
S5
T5
S6
P
J2 AC IN
110~127, 220~240V 50/60Hz
220V 50Hz
J2 AC IN
J1 EARPHONE/ EXT. SPEAKER
PM DYNAMIC SPEAKER 10cm (4") 3Ω
Q4
(2SC945-Q)
REGULATOR
D2
(RVDRD4R3EB)
REGULATOR
D6~9
(RVDISR35)
RECTIFIER


IC1
IC2
IC3
E C B
Q1~4
Ca
Cathode
A
Anode
D2
Cathode
Anode
Ca
A
D3~5
Ca
Cathode
A
Anode
D6~9

ıark have special
afety.
omponents, use only
.

m are two types of numbers;
ıroduction parts number for

upply parts number and
n they are identicial.
dle East and Africa areas.
ıt United Kingdom, F.R. Germany,

e.g. Q3

2SA564Q ——————— **Production parts number**

[2SA722-S] ——————— **Supply parts number**

* **The supply parts number is described alone in the replacement parts list.**

* **This schematic diagram may be modified at any time with the development of new technology.**

➡ +B Voltage Line

➡ Radio (FM) Signal Line

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